

AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remains under examination in the application are presented below. The claims are presented in ascending order and each includes one status identifier. Those claims not cancelled or withdrawn but amended by the current amendment utilize the following notations for amendment: 1. deleted matter is shown by strikethrough; and 2. added matter is shown by underlining.

1. (Currently Amended) An arrangement for displaying images of a scene or object, comprising an image display device ~~(1) consisting of~~ comprising a multitude of light-transmitting image rendering elements, which are arranged in a raster of rows and/or columns and on which bits of image information from several perspective views of the scene or object can be displayed,

and comprising a plane wavelength filter array ~~[(3)]~~, which is arranged ~~(in the viewing direction of an observer 7)~~ behind the image display device ~~[(1)]~~, and ~~which consists of~~ comprising a multitude of filter elements arranged in rows and/or columns, part of which are transparent to light of specified wavelength ranges, whereas ~~[(the)]~~ a remaining part are opaque,

and comprising a controllable means of illumination illuminator providing at least two modes of operation, in which

in a first mode of operation, light from a first light source ~~[(2)]~~ arranged behind the wavelength filter array ~~[(3)]~~ reaches the observer ~~[(7)]~~ by passing through at least part of the light-transmitting filter elements and subsequently through a correlated part of the image

rendering elements of the image display device, so that the scene or object is seen by the observer [(7)] in three dimensions, and in which

in a second mode of operation, light from a second light source [(4)] having at least one emission plane that is arranged between wavelength filter array [(3)] and image display device [(1)] and that is essentially parallel to the wavelength filter array [(3)], leaves the said at least one emission plane or emission planes and reaches the observer [(7)] by passing through the image rendering elements of the image display device [(1)] but not through the filter elements of the wavelength filter array [(3)], so that the scene or object is seen by the observer [(7)] at least partially in two dimensions, and ~~in which~~

further comprising a diffuse illuminator ~~means are provided for uniform illumination in~~ the second mode of operation.

2. (Currently Amended) An arrangement as claimed in Claim 1, in which

the second light source [(4)] is a planar light source configured as ~~an optical waveguide slab~~ (light guide [(19)]), and in which

the light guide [(19)] has two mutually opposite large surfaces [(12)] and peripheral narrow surfaces, and the large surface [(12)] facing the image display device [(1)] or away from it corresponds to the emission plane, or both large surfaces [(12)] correspond to the emission planes, and in which

the light guide [(19)] receives light from one or several laterally arranged light sources [(5)], and in which

the light is coupled into the light guide ~~[[19]]~~ via one or several of the narrow surfaces, partially reflected back and forth by total reflection off the large surfaces ~~[[12]]~~, and partially coupled out at the large surface ~~[[12]]~~ corresponding to the emission plane or the large surfaces ~~[[12]]~~ corresponding to the emission planes.

3. (Currently Amended) An arrangement as claimed in Claim 1 ~~[[or 2]]~~, in which, in the second mode of operation, the first light source ~~[[2]]~~ is switched on in addition to the second light source ~~[[4]]~~, only the large surface ~~[[12]]~~ facing away from the image display device is ~~intended as~~ an emission plane, and, to provide uniform illumination, only those areas of the emission plane are intended for light emission that, in case of projection onto the wavelength filter array ~~[[3]]~~ along a direction normal to the plane, are essentially congruent with the areas occupied by opaque filter elements.

4. (Currently Amended) An arrangement as claimed in Claim 3, in which the wavelength filter array ~~[[3]]~~ is ~~provided on~~ located at the large surface ~~[[12]]~~ corresponding to the emission plane.

5. (Currently Amended) An arrangement as claimed in Claim 3 ~~[[or 4]]~~, in which the large surface ~~[[12]]~~ corresponding to the emission plane is, in the areas intended for emission, coated with a structure that interferes with total reflection, the structure ~~preferably consisting of~~ comprising a coat of particles.

6. (Original) An arrangement as claimed in Claim 5, in which the interfering capability of the particles across the emission plane is inhomogeneous, ranging between two limit values that vary with the density of particles in the coating.

7. (Original) An arrangement as claimed in Claim 6, in which the interfering capability of the particles in each single coated area is essentially constant.

8. (Currently Amended) An arrangement as claimed in Claim 6 [[or 7]], in which two parallel, opposite narrow surfaces are intended for inward light coupling, and in which the interfering capability of the coated areas, arranged in stripe-shaped segments aligned in parallel with the narrow surfaces, progressively increases with increasing distances x_1 , x_2 up to a common maximum.

9. (Original) An arrangement as claimed in Claim 5, in which the interfering capability of the particles is essentially homogeneous, both within each of the partial areas and across the emission plane as a whole.

10. (Currently Amended) An arrangement as claimed in Claim 9, in which two mutually opposite, vertical narrow surfaces are intended for inward light coupling, and in which, in selected, non-overlapping areas of the wavelength filter array [[[3)]] comprising one or several rows ~~or/and~~ and /or columns each and, together, completely covering the wavelength filter array [[[3)]]], the ratio between the surface areas covered by filter elements that transmit light of

specified wavelength ranges and the surface areas covered by opaque filter elements is defined depending on the maximally achievable luminance in those partial areas of the emission plane of the planar light source that, in case of projection along a direction normal to the plane, each correspond to one of the selected areas thus selected of the wavelength filter array.

11. (Currently Amended) An arrangement as claimed in ~~any of the Claims~~ Claim 5 ~~through 10~~, in which an essentially light-absorbing layer is provided on top of the coat that interferes with total reflection.

12. (Currently Amended) An arrangement as claimed in ~~any of the previous Claims~~ Claim 1, in which the controllable illuminator ~~means of illumination is provided with~~ comprises a device to control the first light source ~~[(2)]~~ so as to create a luminance gradient over the plane of the wavelength filter array ~~[(3)]~~.

13. (Currently Amended) An arrangement as claimed in ~~any of the previous Claims~~ Claim 1, in which ~~[[in]]~~ the controllable illuminator ~~means of illumination~~ comprises a first light source ~~[(2)]~~ that is a discharge lamp provided with a plane sealing glass on the side facing and parallel to the wavelength filter array (3) and parallel to it, and with a phosphor coating provided on the inside of the sealing glass.

14. (Currently Amended) An arrangement as claimed in Claim 13, in which the phosphor coating is only applied on areas that, in case of projection onto the wavelength filter

array [(3)] along a direction normal to the plane, are essentially congruent with the areas covered by filter elements that transmit light of specified wavelength ranges.

15. (Currently Amended) An arrangement as claimed in Claim 13 [[or 14]], in which the wavelength filter array (3) ~~is provided~~ is located on the outside of the sealing glass.

16. (Currently Amended) An arrangement as claimed in ~~any of the previous Claims Claim 1~~, in which, in the second mode of operation, part of the light of the first light source [(2)] is coupled out and then re-coupled into the second light source [(4)] by ~~means of~~ optical elements, [[this]] the coupled out part of the light being defined by the ratio between the wavelength filter array's surface areas covered by filter elements that transmit light of specified wavelength ranges and the surface areas covered by opaque filter elements.

17. (Currently Amended) An arrangement as claimed in Claim 16, ~~in which~~ further comprising light guides, [[and/or]] reflecting elements ~~are provided~~ or both of the foregoing for outcoupling and inward coupling.

18. (Currently Amended) An arrangement as claimed in ~~any of the previous Claims Claim 1~~, further comprising ~~in which~~ an optically effective material, ~~preferably comprising a~~ filter plate or a thin foil having a microstructure of prismatic effect, [[is]] arranged between the first and second light sources [(2, 4)], so that light of the first light source [(2)] having angles

of incidence greater than ~~[[the]]~~ a critical angle of the second light source ~~[[(4)]]~~ is essentially prevented from entering the second light source ~~[[(4)]]~~.

19. (Currently Amended) An arrangement as claimed in Claim 1, in which the second light source ~~(4) consists of~~ comprises a great number of separately controllable, individual light sources that radiate light towards the image display device and that, simultaneously, are configured as opaque filter elements in the wavelength filter array ~~[[(3)]]~~.

20. (Currently Amended) An arrangement as claimed in Claim 19, in which the light sources are light-emitting, essentially ~~plane~~ planar polymer layers.

21. (Currently Amended) An arrangement for displaying images of a scene or object, comprising an image display device ~~(1) consisting of~~ comprising a multitude of translucent image rendering elements, on which bits of image information from several perspective views of the scene or object can be displayed,

and comprising an array, which is arranged ~~(in the viewing direction of an observer)~~ behind the image display device ~~[[(1)]]~~, and which ~~contains~~ comprises a multitude of individually controllable light sources arranged in rows and/or columns and ~~intended to emit~~ capable of emitting light of specified wavelength ranges, in which

in a first mode of operation, light is emitted by those light sources only whose light reaches the observer through those of the image rendering elements of the image display device

[[1]] that are each assigned to the respective light source, so that a three-dimensional image is displayed, and in which

in a second mode of operation, light is emitted additionally by at least another part of the light sources whose light reaches the observer through image rendering elements of the image display device [[1]] without any special assignment, so that the image displayed is, at least in part, two-dimensional.

22. (Currently Amended) An arrangement as claimed in Claim 21, in which the light sources are essentially ~~plane~~ planar, light-emitting polymer layers.

23. (Currently Amended) An arrangement as claimed in Claim 21, ~~in which~~ further comprising a liquid crystal display ~~is provided~~ as a light source.

24. (Currently Amended) An arrangement as claimed in Claim 2, in which the diffuse illuminator ~~means of uniform illumination~~ in the second mode of operation ~~[[is]]~~ comprises a light outcoupling structure ~~[[13]]~~ that can be switched on and off and is ~~provided~~ located on at least one of the large surfaces ~~[[12]]~~.

25. (Currently Amended) An arrangement as claimed in Claim 24, in which the light outcoupling structure ~~[[13]]~~ that can be switched on and off ~~[[is]]~~ comprises a switchable scattering layer.

26. (Original) An arrangement as claimed in Claim 25, in which the switchable scattering layer is switched to be transparent in the first mode of operation and scattering in the second mode of operation.

27. (Currently Amended) An arrangement as claimed in Claim 26, in which, in the second mode of operation, only partial surfaces ~~[(20)]~~ of the switchable scattering layer are switched to be scattering.

28. (Currently Amended) An arrangement as claimed in Claim 27, in which the partial areas ~~[(20)]~~ are stripe-shaped.

29. (Currently Amended) An arrangement as claimed in Claim 28, in which the stripe-shaped partial areas ~~[(20)]~~ differ in width.

30. (Currently Amended) An arrangement as claimed in Claim 29, in which every two adjacent partial areas ~~[(20)]~~ that are switched to be scattering are separated by permanently transparent stripe-shaped partial areas ~~[(21)]~~, so that the degree of light outcoupling from the light guide ~~[(19)]~~ per unit area differs from place to place on the light guide ~~[(19)]~~.

31. (Currently Amended) An arrangement as claimed in ~~any of the Claims 24 through 30~~ Claim 24, in which the switchable scattering layer in the second mode of operation is

switched to have differing degrees of scattering from place to place, so that the degree of light outcoupling from the light guide ~~[(19)]~~ differs from place to place on the light guide ~~[(19)]~~.

32. (Currently Amended) An arrangement as claimed in Claim 31, in which pairs of different control signals are applied to different places on the switchable scattering layer to produce different degrees of scattering in ~~these~~ the places.

33. (Currently Amended) An arrangement as claimed in ~~any of the Claims 24 through 32~~ Claim 24, in which the opaque filter elements on the side of the wavelength filter array ~~[(3)]~~ that faces the observer are diffusely scattering.

34. (Currently Amended) An arrangement as claimed in ~~any of the Claims 24 through 33~~ Claim 24, in which the large faces ~~[(12)]~~ of the light guide ~~[(19)]~~ have plane and/or textured surfaces.

35. (Currently Amended) An arrangement as claimed in ~~any of the Claims 24 through 34~~ Claim 24, in which the switchable scattering layer is a liquid crystal layer – ~~for example, one having a cholesteric-nematic transition~~ – that is transparent to light if a suitable voltage is applied and that scatters light if such voltage is missing.

36. (Currently Amended) An arrangement as claimed in Claim 2, in which the diffuse illuminator ~~means for uniform illumination~~ in the second mode of operation is a

switchable scattering disk ~~[(22)]~~ arranged between the light guide ~~[(19)]~~ and the image display device ~~[(1)]~~, this scattering disc being switched to be transparent in the first mode of operation and, at least over part of its surface, scattering in the second mode of operation, so that the brightness contrast of the light passing the switchable scattering disk ~~[(22)]~~ in the second mode of operation is reduced.

37. (Currently Amended) An arrangement as claimed in ~~any of the Claims 24 through 36~~ Claim 24, in which, in the second mode of operation, the first light source ~~[(2)]~~ is switched on in addition to the second light source ~~[(4)]~~.

38. (Currently Amended) An arrangement for displaying images of a scene or object, comprising an image display device ~~(1) consisting of~~ comprising a multitude of light-transmitting image rendering elements, which are arranged in a raster of rows and/or columns and on which bits of image information from several perspective views of the scene or object can be displayed,

and comprising at least two plane wavelength filter arrays ~~(23, 24)~~ which are arranged ~~(as seen in the viewing direction of an observer 7)~~ behind the image display device ~~[(1)]~~, and each of which consists of a multitude of filter elements arranged in rows and/or columns, part of which are transparent to light of specified wavelength ranges, whereas the remaining part are opaque to light, with one of the wavelength filter arrays ~~(23 or 24)~~ being shiftable relative to the other ~~(24 or 23, respectively)~~, and with both arrays ~~preferably~~ being substantially in close contact with each other,

and comprising a ~~preferably~~ substantially planar light source ~~[[2]]~~ arranged ~~(in-viewing direction)~~ behind the wavelength filter arrays ~~(23, 24)~~,

and comprising a switchable scattering disk ~~(22)~~ that is arranged between the image display device ~~[[1]]~~ and the wavelength filter arrays ~~(23, 24)~~ at a sufficient distance from the latter, and that is switched to be transparent in the first mode of operation and, at least over part of its surface, scattering in the second mode of operation,

in which, in a first mode of operation, the wavelength filter arrays ~~(23, 24)~~ occupy such positions relative to each other that the light emitted by the light source ~~[[2]]~~ arranged behind the wavelength filter arrays ~~(23, 24)~~ reaches the observer ~~[[7]]~~ by passing through at least part of the light-transmitting filter elements of both wavelength filter arrays ~~(23, 24)~~ and subsequently through a correlated part of the image rendering elements of the image display device ~~[[1]]~~, so that the scene or object is seen by the observer ~~[[7]]~~ in three dimensions, and in which

in a second mode of operation, the switchable scattering disk ~~[[22]]~~ is switched to be scattering at least over part of its area, and the wavelength filter arrays ~~(23, 24)~~ have such positions relative to each other that, compared to the first mode of operation, more light reaches the observer ~~[[7]]~~ by passing through the light-transmitting filter elements of both wavelength filter arrays ~~(23, 24)~~ and subsequently through the scattering disk ~~[[22]]~~ that is switched to be scattering in the second mode of operation and through the image rendering elements of the image display device ~~[[1]]~~, so that the scene or object is seen by the observer ~~[[7]]~~ in two dimensions.

39. (Currently Amended) An arrangement as claimed in Claim 38, in which a number W of more than two wavelength filter arrays are provided, ~~a number of~~ at least W-1 of them being shiftable.

40. (Currently Amended) An arrangement as claimed in ~~any of the Claims 38 or 39~~ Claim 38, in which the shifting of each shiftable wavelength filter array ~~(23, 24)~~ takes place in the row direction of the raster of image rendering elements of the image display device.

41. (Currently Amended) An arrangement as claimed in Claim 40, in which the length of shifting of each shiftable wavelength filter array ~~(23, 24)~~ is smaller than the horizontal period of the light-transmitting filter elements provided on the respective wavelength filter array ~~(23, 24)~~, if such a period is provided.

42. (Currently Amended) An arrangement as claimed in ~~any of the Claims 38 through 41~~ Claim 38, in which each shiftable wavelength filter array ~~(23, 24) is provided with~~ comprises an electromechanical control element, ~~e.g., a piezoelectric positioner~~, which effects the shifting.

43. (Currently Amended) An arrangement as claimed in Claim 2, in which the diffuse illuminator ~~means for uniform illumination~~ in the second mode of operation ~~[[is]]~~ comprises an optically scattering foil ~~[[(44)]]~~ arranged between the wavelength filter array ~~[[(3)]]~~ and the light guide ~~[[(19)]]~~.

44. (Currently Amended) An arrangement as claimed in Claim 43, in which switching into the first mode of operation is ~~effected~~ accomplished by removing the foil ~~[(44)]~~ between the wavelength filter array ~~[(3)]~~ and the light guide (19), ~~preferably by means of a winding and unwinding mechanism (45).~~

45. (Currently Amended) An arrangement as claimed in Claim 43, in which the foil ~~[(is an)]~~ has ~~electrophoretic component (43),~~ properties which ~~[(is)]~~ cause it to be optically scattering in the second mode of operation and transparent to light in the first mode of operation, the switching between the second and first modes being ~~effected~~ accomplished by influencing the electrophoretic properties.

46. (Currently Amended) An arrangement as claimed in ~~any of the Claims 24 through 37 or 43 through 45~~ Claim 24, in which the wavelength filter array (3) ~~is~~ comprises an electrophoretic component provided with a control device, in which the opaque filter elements are switched to absorb light in the first mode of operation and to reflect light in the second mode of operation ~~(as seen from the direction of the observer 7).~~

47. (Currently Amended) An arrangement for displaying images of a scene or object, comprising an image display device (1) ~~consisting of~~ comprising a multitude of light-transmitting image rendering elements, ~~which are~~ arranged in a raster of rows and/or columns

and on which bits of image information from several perspective views of the scene or object can be displayed,

and comprising a plane, controllable wavelength filter array ~~[[3]]~~, which is arranged ~~(in the viewing direction of an observer 7)~~ behind the image display device ~~[[1]]~~, and which consists of a multitude of filter elements arranged in rows and/or columns, part of which are transparent to light of specified wavelength ranges,

and comprising a preferably planar light source ~~[[2]]~~ arranged ~~(in viewing direction)~~ behind the wavelength filter array ~~[[3]]~~,

in which, in a first mode of operation, ~~[[the]]~~ a remaining part of the filter elements are controlled to be opaque to light, light emitted by the light source reaches the observer ~~[[7]]~~ by passing through at least part of the light-transmitting filter elements and subsequently through a correlated part of the image rendering elements of the image display device ~~[[1]]~~, so that the scene or object is seen by the observer ~~[[7]]~~ in three dimensions, and in which

the wavelength filter array ~~[[3]]~~ is an electrophoretic component ~~[[40]]~~ and, in a second mode of operation, the remaining part of the filter elements are controlled to be transparent to light, so that the scene or object is seen by the observer ~~[[7]]~~ in two dimensions.

48. (Currently Amended) An arrangement as claimed in ~~any of the previous Claims~~ Claim 1, in which, in the first mode of operation providing at least partially three-dimensional display, either eye of the observer predominantly, but not exclusively sees a particular selection of the displayed bits of information from several perspective views of the scene or object, so that the observer has a spatial impression.

Please add new claims 49-52 as follows:

49. (New) An arrangement as claimed in Claim 21, in which, in the first mode of operation providing at least partially three-dimensional display, either eye of the observer predominantly, but not exclusively sees a particular selection of the displayed bits of information from several perspective views of the scene or object, so that the observer has a spatial impression.

50. (New) An arrangement as claimed in Claim 38, in which, in the first mode of operation providing at least partially three-dimensional display, either eye of the observer predominantly, but not exclusively sees a particular selection of the displayed bits of information from several perspective views of the scene or object, so that the observer has a spatial impression.

51. (New) An arrangement as claimed in Claim 47, in which, in the first mode of operation providing at least partially three-dimensional display, either eye of the observer predominantly, but not exclusively sees a particular selection of the displayed bits of information from several perspective views of the scene or object, so that the observer has a spatial impression.

52. (New) An arrangement as claimed in Claim 35, in which the liquid crystal layer has a cholesteric-nematic transition.